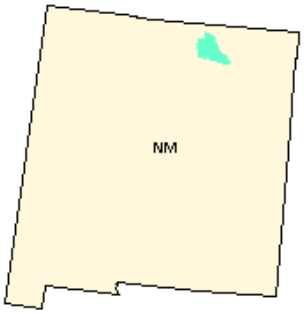
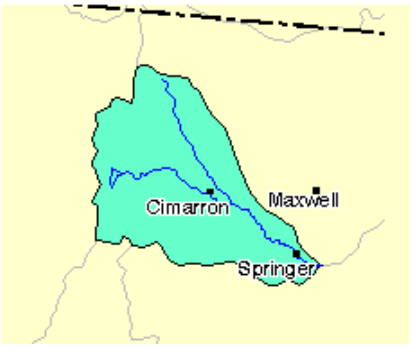
REVISED (JANUARY 2004)
TOTAL MAXIMUM DAILY LOAD FOR
METALS (CHRONIC ALUMINUM)





IN CIENEGUILLA CREEK

Summary Table

New Mexico Standards Segment	Canadian River, 20.6.4.309
Waterbody Identifier	• Cieneguilla Creek from the inflow to Eagle Nest Lake to the headwaters (CR2-50000) 13.6 mi.
Parameters of Concern	Metals (Chronic Aluminum)
Uses Affected	High Quality Coldwater Fishery
Geographic Location	Canadian River Basin (Cimarron)
Scope/size of Watershed	1032 mi^2 (Cimarron Basin) 56 mi^2 (TMDL area)
Land Type	Ecoregions: Southern Rockies (210, 211) Southwestern Tablelands (260, 261)
Land Use/Cover	Forest (51%), Rangeland (38%), Agriculture (9%), Urban (1.4%), Water (0.6%)
Identified Sources	Streambank Modification/Destabilization, Removal of Riparian Vegetation, Resort Development, Rangeland, Natural, Municipal Point Sources
Watershed Ownership	Private (89%), Forest Service (9%), State (2%)
Priority Ranking	4
Threatened and Endangered Species	None
TMDLs for Cieneguilla Creek: Metals (Aluminum)	 WLA(3.1) + LA(3.1) + MOS(1.1)= **7.3 lbs/day**

Table of Contents

EXECUTIVE SUMMARY

Section 303(d) of the Federal Clean Water Act requires states to develop TMDL management plans for water bodies determined to be water quality limited. A TMDL documents the amount of a pollutant a water body can assimilate without violating a state's water quality standards. It also allocates that load capacity to known point sources and nonpoint sources at a given flow. TMDLs are defined in 40 CFR Part 130 as the sum of the individual Waste Load Allocations (WLA) for point sources and Load Allocations (LA) for nonpoint sources, including a margin of safety and natural background conditions.

The Cimarron River Basin is a sub-basin of the Canadian River Basin, located in northeastern New Mexico. Stations were located throughout the basin to evaluate the impact of tributary streams and to establish background conditions. As a result of this monitoring effort, several exceedances of New Mexico water quality standards for metals (chronic aluminum) were documented on Cieneguilla Creek from the inflow to Eagle Nest Lake to the headwaters (13.6 mi.). This Total Maximum Daily Load (TMDL) document addresses metals (chronic aluminum). A TMDL has already been finalized for Cieneguilla Creek for turbidity and stream bottom deposits (SWQB/NMED 1999a).

A general implementation plan for activities to be established in the watershed is included in this document. The Surface Water Quality Bureau's Watershed Protection Section (SWQB/NPSS) will further develop the details of this plan. Implementation of recommendations in this document will be done with full participation of all interested and affected parties. During implementation, additional water quality data may be generated. As a result targets will be re-examined and potentially revised; this document is considered to be an evolving management plan. In the event that new data indicate that the targets used in this analysis are not appropriate or if new standards are adopted, the load capacity will be adjusted accordingly. When water quality standards have been achieved, the reach will be removed from the TMDL list.

NOTE: This TMDL was originally approved in February 2001. The TMDL was revised in 2003 to include a wasteload allocation for the proposed Village of Angel Fire Wastewater Treatment Plant.

List of Abbreviations

BMP	**Best Management Practice**
CFS	**Cubic Feet per Second**
CWA	**Clean Water Act**
CWAP	**Clean Water Action Plan**
CWF	**Coldwater Fishery**
EPA	**Environmental Protection Agency**
FS	**United States Department of Agriculture Forest Service**
HQCWF	**High Quality Coldwater Fishery**
ISI	**Interstitial Space Index**
LA	**Load Allocation**
MGD	**Million Gallons per Day**
mg/L	**Milligrams per Liter**
MOS	**Margin of Safety**
MOU	**Memorandum of Understanding**
NMED	**New Mexico Environment Department**
NMSHD	**New Mexico State Highway and Transportation Department**
NPDES	**National Pollutant Discharge Elimination System**
NPS	**Nonpoint Source**
NTU	**Nephelometric Turbidity Units**
SBD	**Stream Bottom Deposits**
SWQB	**Surface Water Quality Bureau**
TMDL	**Total Maximum Daily Load**
TSS	**Total Suspended Solids**
UWA	**Unified Watershed Assessment**
WLA	**Waste Load Allocation**
WQLS	**Water Quality Limited Segment**
WQCC	**New Mexico Water Quality Control Commission**
WQS	**Water Quality Standards**

Background Information

The Cimarron River Basin is a sub-basin of the Canadian River Basin, located in northeastern New Mexico. This 1032 mi.^{2} watershed is dominated by both forest and rangeland (Figure 1) on mostly private land. Cieneguilla Creek from the inflow to Eagle Nest Lake to the headwaters (13.6 mi.) is at the western side of the watershed on mostly private land.

Surface water quality monitoring stations were used to characterize the water quality of the stream reaches (see Figure 2). Stations were located to evaluate the impact of tributary streams and to establish background conditions. As a result of this monitoring effort, several exceedances of New Mexico water quality standards for metals (chronic aluminum) and temperature were documented on Cieneguilla Creek from the inflow to Eagle Nest Lake to the headwaters (13.6 mi).

Endpoint Identification

Target Loading Capacity

Overall, the target values are determined based on 1) the presence of numeric criteria, 2) the degree of experience in applying the indicator and 3) the ability to easily monitor and produce quantifiable and reproducible results. For this TMDL document the target value for metals (aluminum) is based on numeric criteria.

Metals (Chronic Aluminum)

The State's standard leading to an assessment of use impairment is the numeric criterion for dissolved aluminum (chronic) of 87 *ug*/L for a High Quality Coldwater Fishery (HQCWF). There were no exceedances of the acute standard for aluminum.

Flow

Metals concentrations in a stream can vary as a function of flow. As flow decreases the concentration of metals can increase. Similarly, as flows decline temperatures have a tendency to increase. These TMDLs are calculated for each reach at a specific flow. US Geologic Survey gages were used to estimate flow on those days water samples were taken. It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems the target load will vary based on the changing flow. Management of the load should set a goal at water quality standards attainment; not meeting the calculated target load.

Figure 1:

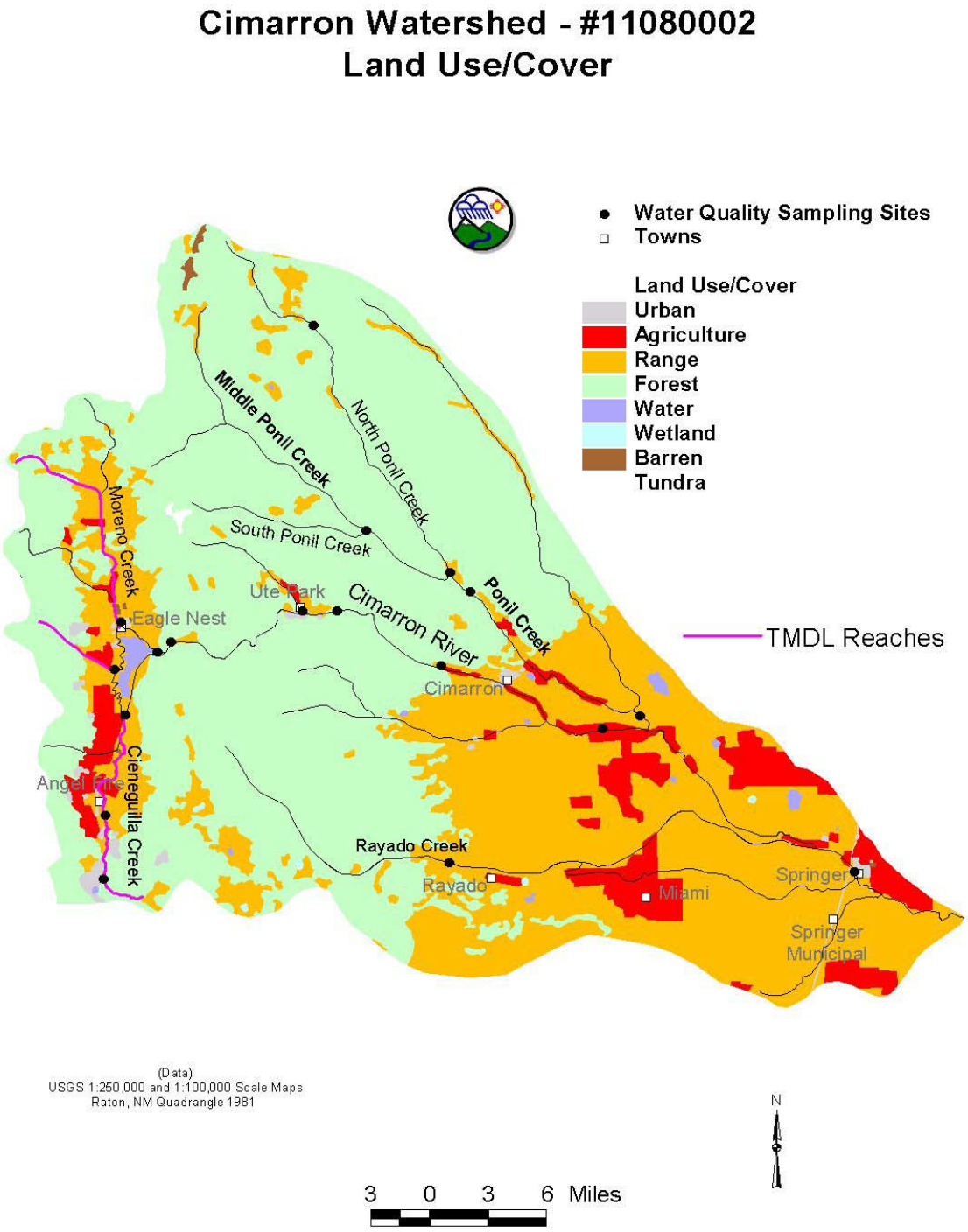
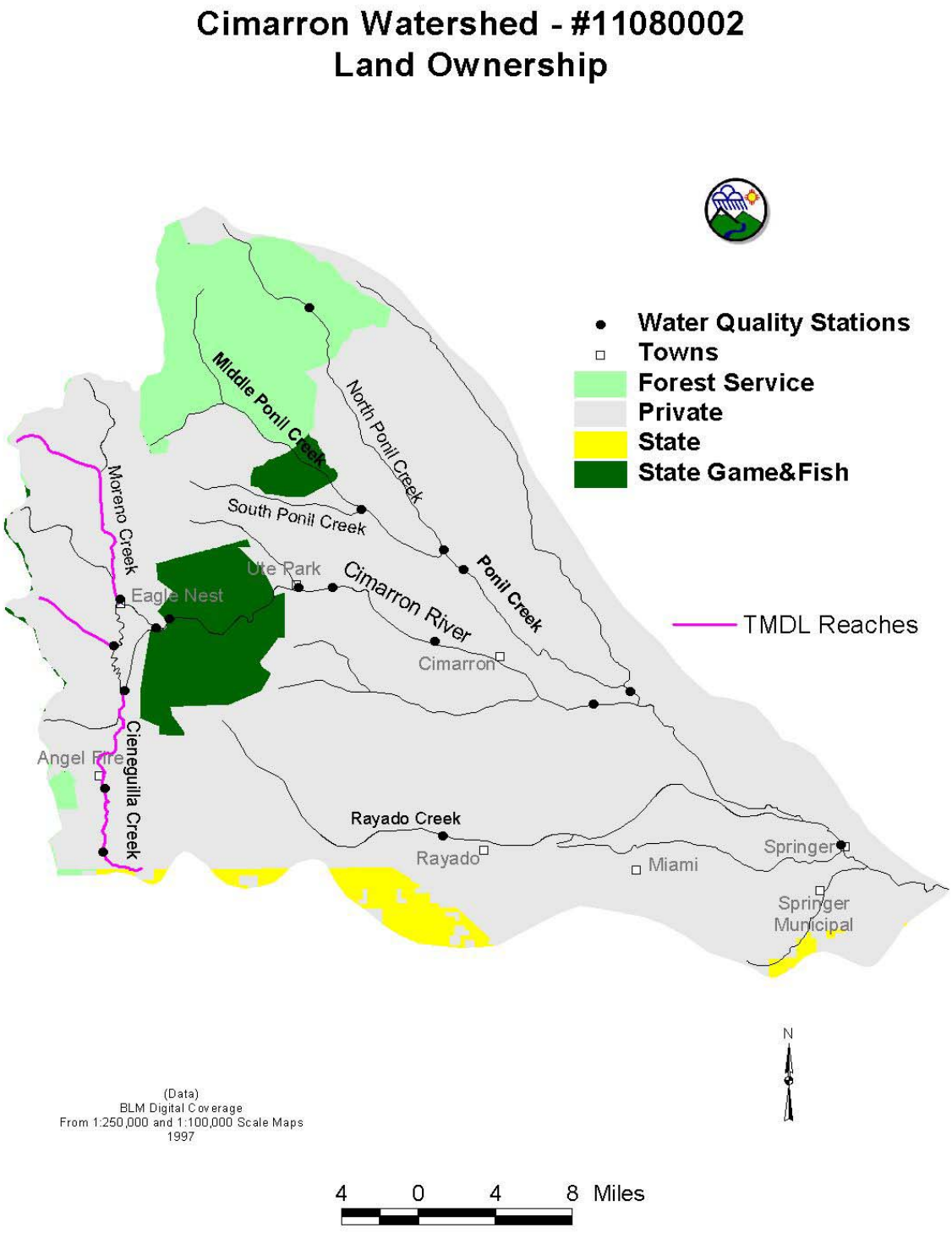

Cimarron Watershed - #11080002
Land Use/Cover
Water Quality Sampling Sites
Towns
Land Use/Cover
Urban
Agriculture
Range
Forest
Water
Wetland
Barren
Tundra
TMDL Reaches
Middle Ponil Creek
North Ponil Creek
South Ponil Creek
Ponil Creek
Moreno Creek
Cieneguilla Creek
Cimarron River
Ute Park
Eagle Nest
Cimarron
Angel Fire
Rayado Creek
Rayado
Miami
Springer
Springer Municipal
(Data)
USGS 1:250,000 and 1:100,000 Scale Maps
Raton, NM Quadrangle 1981
N
3 0 3 6 Miles

Figure 2:


Cimarron Watershed - #11080002
Land Ownership
Water Quality Stations
Towns
Forest Service
Private
State
State Game&Fish
TMDL Reaches
Middle Ponil Creek
North Ponil Creek
South Ponil Creek
Ponil Creek
Moreno Creek
Ute Park
Eagle Nest
Cimarron River
Cimarron
Angel Fire
Cieneguilla Creek
Rayado Creek
Rayado
Miami
Springer
Springer Municipal
N
(Data)
BLM Digital Coverage
From 1:250,000 and 1:100,000 Scale Maps
1997
4 0 4 8 Miles

*Calculation*s

Target loads for metals are calculated based on a flow, the current water quality standards, and a unit less conversion factor, 8.34 that is used to convert mg/L units to lbs/day (see Appendix A for Conversion Factor Derivation). The target loading capacity is calculated using Equation 1.

Equation 1. critical flow (mgd) x standard (mg/L) x 8.34 (conversion factor) = target loading capacity

The target loads (TMDLs) predicted to attain standards were calculated using Equation 1 and are shown in Table 1.

Table 1: Calculation of Target Loads

Location	Flow (mgd) †	Standard Chronic Aluminum (mg/L)	Conversion Factor	Target Load Capacity (lbs/day)
Cieneguilla	10.0	.087	8.34	7.3

† Flow is the geometric mean of USGS daily gaged flows (station # 07204500) taken on days samples were collected.

The measured loads were calculated using Equation 1. The flows used were taken directly from a USGS gage on the days field measurements were taken. The geometric mean of the data that exceeded the standards from the data collected at each site on Cieneguilla Creek in 1998 was substituted for the standard in Equation 1. The same conversion factor of 8.34 was used. Results are presented in Table 2.

Background loads were not possible to calculate in this watershed. A reference reach, having similar stream channel morphology and flow, was not found. It is assumed that a portion of the load allocation is made up of natural background loads. In future water quality surveys, finding a suitable reference reach will be a priority.

Table 2: Calculation of Measured Loads

Location	Flow† (mgd)	Metals (chronic aluminum)(mg/L)	Conversion Factor	Measured Load (lbs/day)
Cieneguilla	10.0	.272	8.34	22.7

† Flow is the geometric mean of USGS daily gaged flows (station # 07204500) taken on days samples were collected.

<u>Waste Load Allocations and Load Allocations</u>

•*Waste Load Allocation*

There is one potential point source discharger associated with this TMDL. The Village of Angel Fire Wastewater Treatment Plant (WWTP) proposes to discharge into Cieneguilla Creek (Permit No. NM0030503). The application notice from USEPA Region 6 is dated July 22, 2003. The proposed design flow is 0.500 mgd. The waste load allocation is 3.1 lbs/day (0.500 mgd design flow x 0.75 mg/L acute Al standard x 8.34 conversion factor).

•*Load Allocation*

In order to calculate the Load Allocation (LA) the waste load allocation, background, and margin of safety (MOS) were subtracted from the target capacity (TMDL) following Equation 2.

Equation 2. $WLA + LA + MOS = TMDL$

Results are presented in Table 3a (Calculation of TMDLs for Metals (Chronic Aluminum).

Table 3: Calculation of TMDL for Metals (Chronic Aluminum)

Location	WLA (lbs/day)	LA (lbs/day)	MOS (15%) (lbs/day)	TMDL (lbs/day)
Cieneguilla	3.1	3.1	1.1	7.3

The load reductions that would be necessary to meet the target loads were calculated to be the difference between the target load (Table 1) and the measured load (Table 2), and are shown in Table 4 (Calculation of Load Reductions).

Table 4: Calculation of Load Reductions for Metals (Chronic Aluminum) (in lbs/day)

Location	Target Load	Measured Load	Load Reductions
Cieneguilla	7.3	22.7	15.4

Identification and Description of pollutant source(s)

Table 5: Pollutant Source Summary

Pollutant Sources	**Magnitude** (WLA + LA + MOS)	**Location**	**Potential Sources** (% from each)
Point: •Metals (Chronic Aluminum in lbs/day)	3.1	Cieneguilla Creek	50% Municipal Point Source (Village of Angel Fire WWTP)
Nonpoint: •Metals (Chronic Aluminum in lbs/day)	3.1	Cieneguilla Creek	50% Streambank Modification/Destabilization, Removal of Riparian Vegetation, Resort Development, Rangeland, and Natural

Linkage of Water Quality and Pollutant Sources

Where available data are incomplete or where the level of uncertainty in the characterization of sources is large, the recommended approach to TMDLs requires the development of allocations based on estimates utilizing the best available information.

SWQB fieldwork includes an assessment of the potential sources of impairment (SWQB/NMED 1999b). The Pollutant Source(s) Documentation Protocol, shown as Appendix B, provides an approach for a visual analysis of a pollutant source along an impaired reach. Although this procedure is subjective, SWQB feels that it provides the best available information

for the identification of potential sources of impairment in this watershed. Table 5 (Pollutant Source Summary) identifies and quantifies potential sources of nonpoint source impairments along each reach as determined by field reconnaissance and assessment. A further explanation of the sources follows.

Cieneguilla Creek

Results for the turbidity and stream bottom deposits TMDL indicated that a source of impairment found on this reach for sediment appears to be from the improper installation and maintenance of culverts. This, along with present and historic grazing practices along the reach, has led to streambank destabilization and has altered the geomorphology of the stream near roads. SWQB will continue to monitor bank pins that were installed in the fall of 1998 in order to evaluate the amount of bank erosion occurring along Cieneguilla Creek that may be attributable to these culverts.

Recreation in this area is associated with the development of resort areas in the watershed. These activities may result in erosion from ski slopes, parking areas, road construction and maintenance, and land development. Development in this area has increased in the area of impermeable and less-permeable surfaces in the watershed. Decreases in permeability lead to greater peak flows following precipitation events. Higher flows can have impacts on the stream geomorphology that can lead to widening of the channel and removal of riparian vegetation.

Potential sources of aluminum in Cieneguilla Creek include sediment related to high turbidities, high flow, pH, and the commonality of aluminum in soils. Elevated turbidities due to increased flows during spring runoff moving materials into the stream. Spring runoff, due to snowmelt, is acidic and will mobilize aluminum. The majority of the exceedances for metals occurred during high flow events. It is likely that a certain level of aluminum is naturally occurring in the system from the underlying geology of the area.

The Village of Angel Fire WWTP will be discharging into Cieneguilla Creek and has the potential to contribute to aluminum impairment. There will be an aluminum monitoring requirement in the approved NPDES permit with a re-opener clause which will be utilized if elevated levels of aluminum are detected.

Allocation of loads across these varied sources is problematic. Of particular concern are various stream reaches throughout the state listed for excessive dissolved aluminum concentrations. Many New Mexico soils contain high levels of naturally occurring aluminum due to the volcanic terrain of the state. In many New Mexico streams, aluminum is seen at elevated levels in the spring due to higher than normal suspended solids in the stream. In general, increased metals in the water column can be commonly linked to sediment transport and accumulation, where metals are a constituent part of the sediment. The geochemical examination of the watershed area bedrock and surface geology may suggest sources of increased aluminum values. Unfortunately, the state of New Mexico standards do not presently recognized naturally high background levels of aluminum in the state. Therefore, a TMDL must be written. In the future, the SWQB will develop a protocol to evaluate specific areas in the state where dissolved aluminum concentrations can be linked to naturally occurring background levels.

Benthic macroinvertebrates were also collected by NMED/SWQB staff in October 1998 to assess any biological impairment in Cieneguilla Creek. These collections were located @ Cieneguilla Creek below Crooked Creek (reference), and Cieneguilla Creek at the USGS gage. The macroinvertebrate community at the reference site appeared to be healthy and comprised of moderate numbers of pollution sensitive taxa. The habitat assessment for Cieneguilla Creek site at the USGS gage scored slightly lower (83%) and is rated according to the 1998 Assessment Protocol as fully supporting. The biological condition of the Cieneguilla Creek site at the USGS gage was rated as partially supporting. Cieneguilla Creek below Crooked Creek (reference) had a calculated HBI of 3.93, while Cieneguilla Creek site at the USGS gage had a calculated HBI of 3.94. The EPT Index for the reference site was 19, while Cieneguilla Creek site at the USGS gage was 9. Information supporting this recommendation is located in the SWQB's file, which is open to public inspection upon appointment.

Margin of Safety (MOS)

TMDLs should reflect a margin of safety based on the uncertainty or variability in the data, the point and nonpoint source load estimates, and the modeling analysis. For this TMDL, there will be no margin of safety for point sources However, for the nonpoint sources the margin of safety for metals is estimated to be an addition of 15% of the TMDL, excluding the background. This margin of safety incorporates several factors:

- *Errors in calculating NPS loads*

  A level of uncertainty exists in sampling nonpoint sources of pollution. Techniques used for measuring metals concentrations in stream water are 15% accurate (SWQB/NMED, 1999c). Accordingly, a conservative margin of safety increases the TMDL by 15%.

- *Errors in calculating flow*

  Flow estimates were based on actual USGS gage readings (station # 07204500) at the time samples were collected for analysis and do not warrant additional MOS.

Consideration of seasonal variation

Data used in the calculation of this TMDL were collected during spring, summer, and fall in order to ensure coverage of any potential seasonal variation in the system. Since the critical condition is set to low flow, data where exceedances were seen (during low flows) were used in the calculation of the measured loads.

Future Growth

This area is undergoing some growth due to the development of the resort area of Angel Fire. Estimations of future growth are not anticipated to lead to a significant increase for metals that cannot be controlled with best management practice implementation in this watershed.

Monitoring Plan

Pursuant to Section 106(e)(1) of the Federal Clean Water Act, the SWQB has established appropriate monitoring methods, systems and procedures in order to compile and analyze data on the quality of the surface waters of New Mexico. In accordance with the New Mexico Water Quality Act, the SWQB has developed and implemented a comprehensive water quality

monitoring strategy for the surface waters of the State. The monitoring strategy establishes the methods of identifying and prioritizing water quality data needs, specifies procedures for acquiring and managing water quality data, and describes how these data are used to progress toward three basic monitoring objectives: to develop water quality-based controls, to evaluate the effectiveness of such controls and to conduct water quality assessments.

The SWQB utilizes a rotating basin system approach to water quality monitoring. In this system, a select number of watersheds are intensively monitored each year with an established return frequency of every five years.

The SWQB maintains current quality assurance and quality control plans to cover all monitoring activities. This document, "Quality Assurance Project Plan for Water Quality Management Programs" (QAPP) is updated annually.

Current priorities for monitoring in the SWQB are driven by the 303(d) list of streams requiring TMDLs. Short-term efforts will be directed toward those waters which are on the EPA TMDL consent decree (Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, US EPA, Civil Action 96-0826 LH/LFG, 1997) list and which are due within the first two years of the monitoring schedule. Once assessment monitoring is completed those reaches showing impacts and requiring a TMDL will be targeted for more intensive monitoring. The methods of data acquisition include fixed-station monitoring, intensive surveys of priority water bodies, including biological assessments, and compliance monitoring of industrial, federal and municipal dischargers, and are specified in the SWQB Assessment Protocol (SWQB/NMED 1998).

Long term monitoring for assessments will be accomplished through the establishment of sampling sites that are representative of the waterbody and which can be revisited every five years. This gives an unbiased assessment of the waterbody and establishes a long term monitoring record for simple trend analyses. This information will provide time relevant information for use in 305(b) assessments and to support the need for developing TMDLs.

The approach provides:

- a systematic, detailed review of water quality data, allowing for a more efficient use of valuable monitoring resources.
- information at a scale where implementation of corrective activities is feasible.
- an established order of rotation and predictable sampling in each basin which allows for enhanced coordinated efforts with other programs.
- program efficiency and improvements in the basis for management decisions.

It should be noted that a basin will not be ignored during its four year sampling hiatus. The rotating basin program will be supplemented with other data collection efforts. Data will be analyzed, field studies will be conducted, to further characterize identified problems, and TMDLs will be developed and implement. Both long term and field studies can contribute to the 305(b) report and 303(d) listing processes.

The following schedule is a draft for the sampling seasons through 2002 and will be followed in a consistent manner to support the New Mexico Unified Watershed Assessment (UWA) and the Watershed Protection Section. This sampling regime allows characterization of seasonal variation and through sampling in spring, summer, and fall for each of the watersheds.

1998 - Jemez, Chama (above El Vado), Cimarron (above Springer), Santa Fe River, San Francisco
1999 - Chama (below El Vado), middle Rio Grande, Gila, Red River
2000 - Dry Cimarron, upper Rio Grande (part1)
2001 - Upper Rio Grande (part 2), upper Pecos (headwaters to Ft. Sumner), Valles Caldera
2002 - Canadian Basin (East), San Juan, Mimbres

Implementation Plan

Management Measures

Management measures are "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives" (USEPA 1993). A combination of best management practices (BMPs) will be used to implement this TMDL. The focus will be on control of sediment, temperature, and aluminum. Good range management will be encouraged along the entire reach. Along Cieneguilla Creek several types of BMPs should be implemented. SWQB will work with private landowners and the local and state highway departments in this area to encourage the implementation of BMPs such as: riparian restoration, repair and maintenance of culverts, erosion control mechanisms, streambank stabilization, and road maintenance.

Two projects that are partially funded by USEPA 319 monies are currently underway. These projects address erosional issues at the Angel Fire Resort Ski Area. The first project to address sedimentation, Erosion Control Pilot Project - Angel Fire Ski Area, was initiated by private landowners with ranch property along tributaries of Cieneguilla Creek. The private landowners were concerned about the sedimentation of these tributaries and wanted to address the source of sediment. The landowners have implemented best management practices on their property, such as riparian fencing, to address any potential impacts from their grazing activities. They also wanted to look further upstream for any additional problems and determined that the bare soils on several of the ski runs were a significant source of sediment.

The private landowners have implemented a project, with the cooperation and assistance of the Angel Fire Resort Ski Area, to address erosion by means of the re-establishment of vegetation on a number of the bare slopes utilizing intensive management of cattle as a tool. Grass seed and hay are applied to a 5-acre area. A large number of cattle are then introduced into the fenced-in area to help break up the soil, plant the seeds, and mulch the soils. The cattle are left in each 5-acre area for a short period of time and then moved onto another 5-acre section of the ski run. This project will continue for three years and has already begun to prove successful in holding soils in place and developing vegetation on the slopes.

A second project to address erosion at the Angel Fire Resort Ski Area was submitted by the Angel Fire Ski Area and commenced in August 2000. This project, the Soil Stabilization Project, Angel Fire Resort Ski Area focused on other identified problem areas within the ski area that are resulting in sediment transport. Project activities focused on a seeding program and the development and maintenance of water bars.

Stakeholder and public outreach and involvement in the implementation of this TMDL is a crucial element of implementation. Stakeholder participation will include choosing and installing BMPs, as well as potential volunteer monitoring. Stakeholders in this process will include: SWQB, New Mexico State Highway Department, local government, private land owners, environmental groups, Angel Fire Resort, and other interested members of the general public.

Other studies are ongoing throughout this watershed. A §319 project designed to establish sediment rating curves was completed in 2000. Bank pins were also installed in fall of 1998 to examine the bank erodibility in several locations throughout the watershed. Information derived from these studies, as well as SWQB continued monitoring efforts, will contribute to selection and implementation of BMPs in the watershed.

Time Line

Implementation Actions	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Public Outreach and Involvement	X	X	X	X	X
Establish Milestones	X				
Secure Funding	X		X		
Implement Management Measures (BMPs)		X	X		
Monitor BMPs		X	X	X	
Determine BMP Effectiveness				X	X
Re-evaluate Milestones				X	X

Assurances

The Water Quality Act (20 NMAC 6.2) (NMWQCC 1995a) states in §74-6-12(a):

> *The Water Quality Act (this article) does not grant to the commission or to any other entity the power to take away or modify the property rights in water, nor is it the intention of the Water Quality Act to take away or modify such rights.*

In addition, the State of New Mexico Surface Water Quality Standards (see Section 1100E and Section 1105C) (NMWQCC 1995b) states*:*

> *These water quality standards do not grant the Commission or any other entity the power to create, take away or modify property rights in water.*

New Mexico policies are in accordance with the federal Clean Water Act §101(g):

> *It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources*.

New Mexico's Water Quality Act does contain enforceable prohibitions directly applicable to nonpoint sources of pollution. The New Mexico Water Quality Act authorizes the Water Quality Commission to "promulgate and publish regulations to prevent or abate water pollution in the state" and to require permits. Several statutory provisions on nuisance law could also be applied to nonpoint source water pollution. As a constituent agency, NMED has the authority under Chapter 74, Article 6-10 NMSA 1978 to issue a compliance order or commence civil action in district court for appropriate relief if NMED determines that actions of a "person" (as defined in the Act) have resulted in a violation of a water quality standard. NMED nonpoint source water quality management program has historically strived for and will continue to promote voluntary compliance to nonpoint source water pollution concerns by utilizing a voluntary, cooperative approach. The State provides technical support and grant money for the implementation of best management practices and other NPS prevention mechanisms through §319 of the Clean Water Act. Since this TMDL will be implemented through NPS control mechanisms the New Mexico Watershed Protection Section is targeting efforts to this and other watersheds with TMDLs. The Watershed Protection Section coordinates with the Nonpoint Source Taskforce. The Nonpoint Source Taskforce is the New Mexico statewide focus group representing federal and state agencies, local governments, tribes and pueblos, soil and water conservation districts, environmental organizations, industry, and the public. This group meets on a quarterly basis to provide input on the Section 319 program process, to disseminate information to other stakeholders and the public regarding nonpoint source issues, to identify complementary programs and sources of funding, and to help review and rank Section 319 proposals.

In order to ensure reasonable assurances for implementation in watersheds with multiple landowners, including Federal, State and private, NMED has established MOUs with several

Federal agencies, in particular the Forest Service and the Bureau of Land Management. MOUs have also been developed with other State agencies, such as the New Mexico Highway Department. These MOUs provide for coordination and consistency in dealing with nonpoint source issues.

New Mexico's Clean Water Action Plan has been developed in a coordinated manner with the State's 303(d) process. All Category I watersheds identified in New Mexico's Unified Watershed Assessment process are totally coincident with the impaired waters list for 1996 and 1998 approved by EPA. The State has given a high priority for funding assessment and restoration activities to these watersheds.

The time required to attain standards for all reaches is estimated to be approximately 10-20 years. This estimate is based on a five-year time frame implementing several watershed projects that may not be starting immediately or may be in response to earlier projects. The cooperation of private landowners and federal agencies, particularly the USDA Forest Service, will be pivotal in the implementation of this TMDL.

Milestones

Milestones will be used to determine if control actions are being implemented and standards attained. For this TMDL several milestones will be established that will vary based on the BMPs implemented at each site. Examples of milestones include a percentage reduction in metals within a certain time frame, update or develop MOUs with other state, federal, county, and municipal agencies by 2001 to ensure protection and restoration in this watershed, and to increase education and outreach activities regarding sediment erosion in this watershed, particularly for private landowners.

Milestones will be reevaluated periodically, depending on what BMP was implemented. Further implementation of this TMDL will be revised based on this reevaluation. The process will involve: monitoring pollutant loading, tracking implementation and effectiveness of controls, assessing water quality trends in the waterbody, and reevaluating the TMDL for attainment of water quality standards.

Public Participation

Public participation was solicited in development of this TMDL. See Appendix C for flow chart of the public participation process. The original draft TMDL was made available for a 30-day comment period starting **October 10, 2000**. The revised draft TMDL was made available for a 30-day public comment starting October 14, 2003. Response to comments is attached as Appendix D of this document. The draft document notice of availability was extensively advertised via newsletters, email distribution lists, webpage postings (http://www.nmenv.state.nm.us/) and press releases to area newspapers.

References Cited

Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, US EPA, Civil Action 96-0826 LH/LFG, 1997.

SWQB/NMED. 1999a. Total Maximum Daily Load for Turbidity, Stream Bottom Deposits, and Total Phosphorus in the Canadian River Basin (Cimarron). August.

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SWQB/NMED. 1999c. Quality Assurance Project Plan.

SWQB/NMED. 1998. State of New Mexico Procedures for Assessing Standards Attainment for 303(d) List and 305(b) Report Assessment Protocol

USEPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. EPA-840-B-92-002. Washington, D.C.

Appendices

Appendix A: Conversion Factor Derivation

Appendix B: Pollutant Source(s) Documentation Protocol

Appendix C: Public Participation Process Flowchart

Appendix D: Response to Comments

Appendix A: Conversion Factor Derivation

8.34 Conversion Factor Derivation

Million gallons/day **x** Milligrams/liter **x** 8.34 = pounds/day

10^6~~gallons~~/day **x** 3.7854 liters/~~1 gallon~~ **x** 10^{-3}gram/liter **x** 1 pound/454 ~~grams~~ = pounds/day

10^6 (10^{-3}) (3.7854)/454 = 3785.4/454

= 8.3379
= **8.34**

Appendix B: Pollutant Source(s) Documentation Protocol

POLLUTANT SOURCE(S) DOCUMENTATION PROTOCOL

This protocol was designed to support federal regulations and guidance requiring states to document and include probable source(s) of pollutant(s) in their §303(d) Lists as well as the States §305(b) Report to Congress.

The following procedure should be used when sampling crews are in the field conducting water quality surveys or at any other time field staff are collecting data.

Pollutant Source Documentation Steps:

1). Obtain a copy of the most current §303(d) List.

2). Obtain copies of the ***Field Sheet for Assessing Designated Uses and Nonpoint Sources of Pollution***.

3). Obtain 35mm camera that has time/date photo stamp on it. **DO NOT USE A DIGITAL CAMERA FOR THIS PHOTODOCUMENTATION**

4). Identify the reach(s) and probable source(s) of pollutant in the §303(d) List associated with the project that you will be working on.

5). Verify if current source(s) listed in the §303(d) List are accurate.

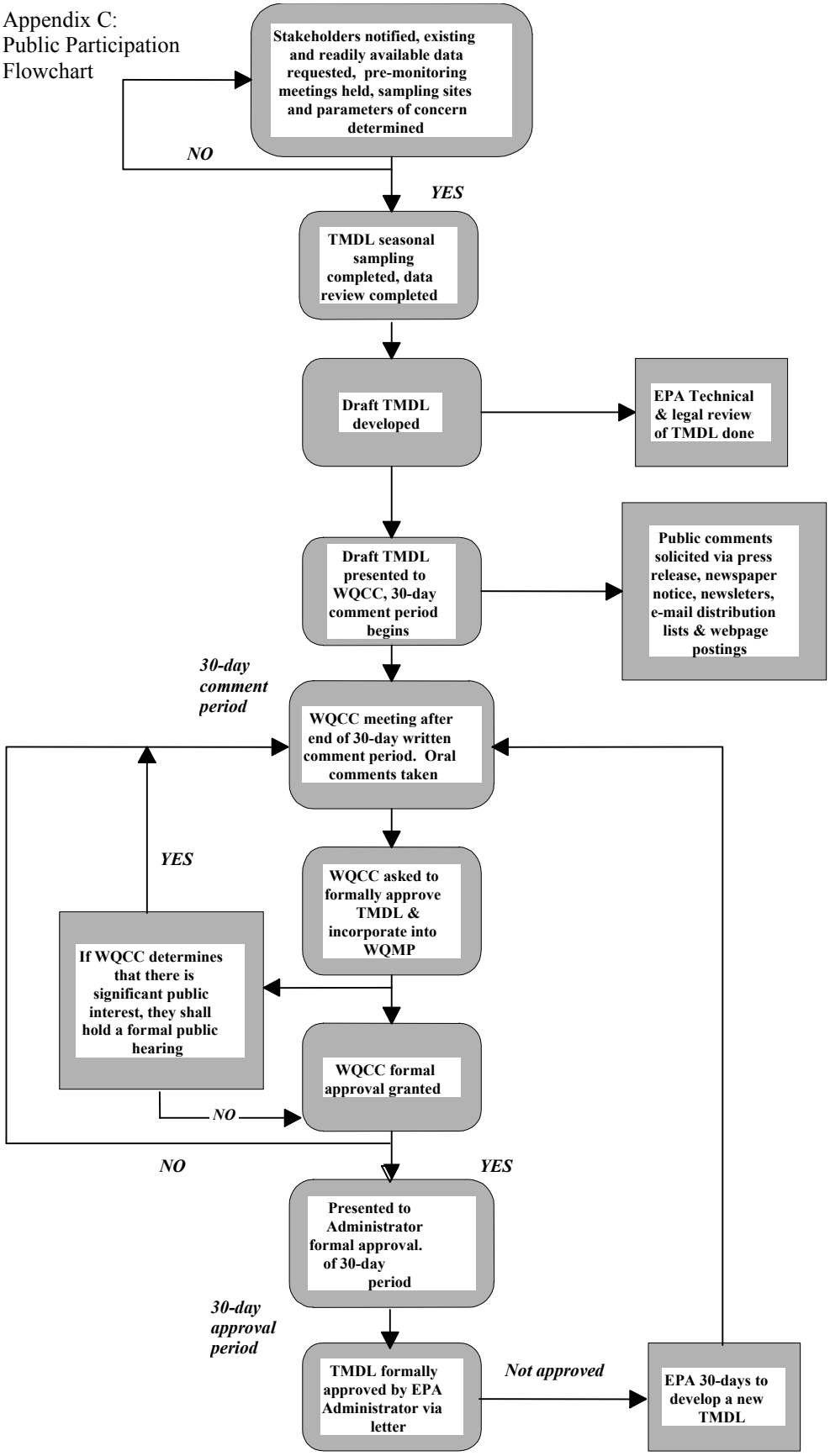
6). Check the appropriate box(s) on the field sheet for source(s) of nonsupport and estimate percent contribution of each source.

7). Photodocument probable source(s) of pollutant.

8). Create a folder for the TMDL files, insert field sheet and photodocumentation into the file.

This information will be used to update §303(d) Lists and the States §305(b) Report to Congress.

Appendix C:
Public Participation
Flowchart



Appendix D: Response to Comments

No public comments were received on the original draft TMDL.